Ice also broke in Milk River of Montana. Several gorges formed in the vicinity of Havre and there was some local flooding. West of the mountains rains, melting snows, and ice caused several floods in the smaller streams of northern Idaho, Washington, and Oregon, and there was much flooding of lowlands as well as serious interruption of railroad and highway traffic.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
East Gulf drainage					
	Feet			*Feet*	
Tombigbee: Lock No. 4, Demopolis, Ala.	39	2	8	43.4	Jan. 5.
Pearl: Jackson, Miss.	20	[1]	12	24.2	Jan. 7.
West Pearl: Pearl River, La.	13	3	11	14.1	Jan. 5, 6.
Mississippi drainage					
Tuscarawas: Gnadenhutten, Ohio	9	1	2	10.7	Jan. 1.
Wabash:					
Lafayette, Ind.	11	20	21	12.6	Jan. 21.
Covington, Ind.	16	21	21	16.1	Jan. 21.
Tippecanoe: Norwoy, Ind.	6	5	17	6.5	Jan. 11, 12.
		19	20	6.3	Jan. 20.
		25	26	6.0	Jan. 26.
Illinois:					
Morris, Ill.	13	5	7	[3] 13.7	Jan. 6.
Peru, Ill.	14	[1]	[4]	20.0	Dec. 18–19.
Henry, Ill.	10	[1]	[1]	14.4	Dec. 17–18.
Peoria, Ill.	18	[1]	2	20.9	Dec. 18–20.
Havana, Ill.	14	[1]	[4]	18.1	Dec. 19.
Beardstown, Ill.	14	[1]	[4]	19.3	Dec. 16–18.
Pearl, Ill.	12	[1]	5	15.8	Dec. 20.
		14	29	13.0	Jan. 19, 22.
Petit Jean: Danville, Ark.	20	19	21	21.8	Jan. 20.
Black:					
Corning, Ark.	11	1	1	11.0	Jan. 1.
		21	30	11.7	Jan. 25.
Black Rock, Ark.	14	[1]	1	25.3	Dec. 15.
Cache: Patterson, Ark.	9	25	28	9.6	Jan. 27.
West Gulf drainage					
Trinity: Trinidad, Tex.	28	1	4	29.1	Jan. 2, 3.
Pacific drainage					
Willamette: Harrisburg, Oreg.	7	2	8	9.5	Jan. 2.
		14	15	9.8	Jan. 14.

[1] Continued from last month.
[3] Ice reading.
[4] Continued at end of month.

MEAN LAKE LEVELS DURING JANUARY, 1928

By UNITED STATES LAKE SURVEY

[Detroit, Mich., February 3, 1928]

The following data are reported in the Notice to Mariners of the above date:

Data	Lakes [1]			
	Superior	Michigan and Huron	Erie	Ontario
Mean level during January, 1928:	*Feet*	*Feet*	*Feet*	*Feet*
Above mean sea level at New York	602.18	578.72	571.26	246.04
Above or below—				
Mean stage of December, 1927	−0.14	−0.06	−0.35	+0.39
Mean stage of January, 1927	+0.74	+0.52	+0.15	+0.76
Average stage for January, last 10 years	+0.57	−0.50	−0.04	+0.96
Highest recorded January stage	−0.60	−3.95	−2.29	−1.56
Lowest recorded January stage	+1.73	+1.34	+1.22	+2.24
Average departure (since 1860) of the January level from the December level	−0.25	−0.11	−0.07	−0.02

[1] Lake St. Clair's level: In January, 1928, 574.04 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, JANUARY, 1928

By J. B. KINCER

General summary.—The outstanding features of the weather for January, 1928, as affecting farming operations, and particularly winter crops, were the cold wave of unusual severity which overspread the Southeast at the beginning of the month, and the persistent drought in the Southwest, extending from western Nebraska and eastern Colorado southward. The cold wave caused heavy damage to winter truck crops in coast sections from Texas to southeastern Virginia, with all but the hardier varieties killed in the extreme Southeast, except in limited areas. Citrus fruits were also damaged considerably, although old groves escaped serious harm, as a rule. In the Southwest very little precipitation occurred, and winter grain crops were badly in need of moisture over a considerable area.

Following the freeze in the South, showers and much warmer weather were favorable in reviving hardy truck that had been previously damaged, and the mild, open weather permitted active field operations throughout the second decade. In the interior States, however, continued absence of snow cover was unfavorable for grass and grain crops in many sections. The last decade had generally warm weather for the season over the western half of the country and low temperatures in the East, and outdoor operations made better advance in the former, and less progress in the latter districts. The sharp freeze the latter part of the period in Southeastern States did no great amount of harm, except along the southeast Florida coast where some crops, particularly tomatoes, were damaged or killed.

Small grains.—Early in the month unseasonably warm weather in the interior States removed the snow cover from important grain areas and left fields generally bare over the principal wheat-producing sections east of the Rocky Mountains. Thereafter, there was but little snow protection, and the rather frequent alternate thawing and freezing were unfavorable for the wheat crop over the eastern half of the belt. In the western portion conditions were more favorable, aside from the need of moisture in parts of the upper Mississippi Valley, in Nebraska, and from western Kansas southward. In the lower Missouri Valley, including eastern Kansas, the moisture from melting snows was favorable and winter grains continued in apparently good condition in most districts. In the far Northwestern States, including Montana, Idaho, Oregon, and Washington, conditions continued generally favorable for winter grains, with fields mostly well protected by snow. In the South, winter oats suffered severely from the freeze early in the month, and reports thereafter were generally unfavorable.

Miscellaneous crops.—In the Ohio Valley, the absence of snow, with alternate freezing and thawing, was unfavorable for meadows. In the Southwest, continued dryness unfavorably affected the range, but in most other portions of the great western grazing districts conditions were favorable, while the generally mild, open weather permitted much grazing in the northern Great Plains. Livestock continued in fair to good condition in most

Western States, with early lambing in the north Pacific area advanced at the close of the month.

Following the damage to truck crops in the Southern States early in the period, the weather was generally favorable and replanting was active. In Florida showers were very beneficial the latter part of the month, but moisture was deficient in that State during most of the time. There was much defoliation of citrus trees, and unprotected groves suffered considerable injury in parts of California by cold weather the last half of the month. Sharp cold periods, however, in Southern States were favorable in retarding the unseasonable advance of fruit buds, and deciduous trees were apparently in good condition at its close.

WEATHER ON THE ATLANTIC AND PACIFIC OCEANS

NORTH ATLANTIC OCEAN

By F. A. YOUNG

As shown on the Pilot Chart, January is normally the stormiest month of the year over the North Atlantic, and during the current month the number of days with gales was equal to, if not in excess of, the normal over the greater part of the steamer lanes. In the 5° square between the forty-fifth and fiftieth parallels and the thirty-fifth and fortieth meridians gales were reported on 11 days, and at times the storm area extended as far south as the thirty-fifth parallel, accompanied by comparatively high barometric readings.

It will be remembered that December was also an unusually stormy month, but the conditions were materially different from those of January. In December there were long periods of low pressure over the area usually occupied by the North Atlantic HIGH, while at the same time anticyclonic conditions prevailed in the vicinity of Iceland. In January, on the contrary, both the North Atlantic HIGH and Icelandic LOW were unusually well developed, as indicated by the large plus and minus pressure departures at Horta and Lerwick, respectively, as shown in Table 1. In both months gales of force 11 and 12 were not uncommon, but in December the usual "westerlies" were often replaced by easterly winds.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, 8 a. m. (75th meridian), North Atlantic Ocean, January, 1928*

Stations	Average pressure	Departure [1]	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Belle Island, Newfoundland	29.59	−0.21	30.20	4th [2]	28.47	26th.
Halifax	29.88	−0.12	30.38	16th [2]	29.24	21st.
Nantucket	29.93	−0.16	30.56	16th	29.08	25th.
Hatteras	30.14	+0.01	30.56	6th	29.76	20th.
Key West	30.17	+0.08	30.38	6th [2]	30.00	19th.
New Orleans	30.11	+0.16	30.60	3d [2]	29.88	19th.
Cape Gracias	29.99	+0.04	30.10	29th	29.90	31st.
Turks Island	30.14	+0.09	30.28	6th	30.10	1st. [2]
Bermuda	30.13	+0.08	30.50	6th	29.84	11th.
Horta, Azores	30.41	+0.31	30.76	5th [2]	29.86	17th.
Lerwick, Shetland Islands	29.38	−0.32	30.06	1st	28.77	10th.
Valencia, Ireland	29.83	−0.07	30.35	5th	29.38	15th.
London	29.89	−0.11	30.37	1st	29.47	16th.

[1] From normals shown on H. O. Pilot Chart based on observations at Greenwich mean noon, or 7 a. m. 75th meridian time.
[2] And on other dates.

The number of days with fog was less than usual over the Grand Banks and steamer lanes, about normal off the American coast between Hatteras and Nantucket, and considerably above in the Gulf of Mexico, where it was reported on seven days.

On the 1st and 2d cyclonic conditions existed off both the American and European coasts. From the 3d to 5th comparatively moderate weather prevailed over the ocean as a whole, being the only period during the month in which a cyclonic disturbance did not occur, although on the 9th the gales were limited to a restricted area between the fifteenth and twentieth meridians.

From the 6th to 8th the middle section of the steamer lanes was swept by westerly gales, and from the 10th to 15th the same conditions prevailed in the eastern section.

On the 16th an exceptionally severe disturbance was central near 50° N., 35° W., with winds of hurricane force reported by vessels near the center.

From the 18th to 20th the greater part of the steamer lanes was storm swept, and on the latter date westerly gales also prevailed over the region north of the Bermudas, west of the sixtieth meridian.

On the 26th there was a heavy storm in the Mediterranean, as shown by storm report in table from the Am. M. S. *William Penn.*

Charts VIII to XIII cover the period from the 21st to 26th inclusive and give an idea of the extremely turbulent conditions which existed at that time.

On the 27th and 28th heavy weather still prevailed in midocean, although the storm area had contracted somewhat since the 26th.

On the 27th a "norther" was reported from the western section of the Gulf of Mexico.

On the 28th Hatteras was near the center of a LOW and moderate northwest gales prevailed along the east coast of Florida. This disturbance moved slowly northeastward, increasing in intensity, and by the 30th was over Newfoundland.

On the 31st a depression over the eastern section of the steamer lanes was responsible for moderate to strong westerly gales between the thirty-fifth meridian and European coast.